

# RECLAMATION

*Managing Water in the West*

## Environmental Assessment

# 2013/14 Acquisition of up to 9,000 Acre Feet of Water from Merced Irrigation District

EA-13-19-MP



U.S. Department of the Interior  
Bureau of Reclamation  
Mid-Pacific Regional Office  
Sacramento, CA

November 2013

## **Mission Statements**

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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## List of Acronyms and Abbreviations

af	acre-feet
afy	acre-feet/year
Basin	Merced Groundwater Basin
cfs	cubic feet per second
CEQA	California Environmental Quality Act
COA	Coordinated Operations Agreement
CV	Central Valley
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
Delta	Sacramento-San Joaquin River Delta
DMC	Delta Mendota Canal
EA	Environmental Assessment
ITA	Indian Trust Assets
Lake McClure	New Exchequer Reservoir
Lake McSwain	McSwain Reservoir
MAGPI	Merced Area Groundwater Pool Interests
MID	Merced Irrigation District
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
PID	Patterson Irrigation District
Reclamation	Bureau of Reclamation

# Introduction

This Environmental Assessment has been prepared by the Bureau of Reclamation (Reclamation) to examine the potential direct, indirect, and cumulative impacts to the affected environment associated with Reclamation's proposal to purchase water from the Merced Irrigation District (MID) and convey that water through a conveyance agreement with Patterson Irrigation District (PID) to the Delta Mendota Canal (DMC) during the timeframe from November 2013 through February 2014.

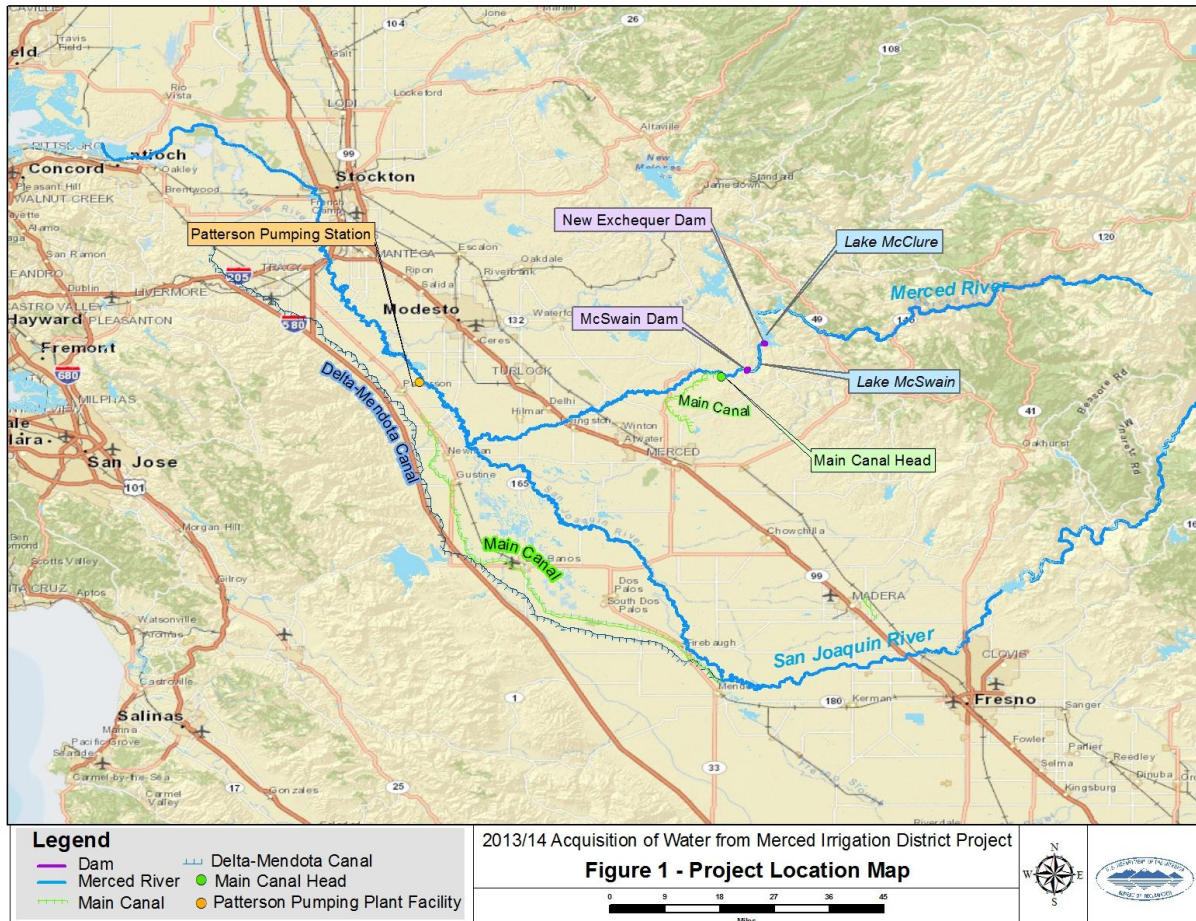
## 1.1 Background

In 2013, Central Valley Project (CVP) agricultural water service contractors located south of the Sacramento-San Joaquin Rivers Delta were allocated 20 percent of their contract supply as a result of extremely dry conditions beginning in January. Reclamation currently projects that storage in CVP reservoirs will be below average entering 2014, and continued dry conditions could exacerbate Reclamation's ability to deliver CVP water to its contractors. Given that 2013 turned out to be one of the driest years on record, Reclamation began meeting with CVP contractors to develop a list of actions that could be implemented to provide additional water to south of Delta agricultural and refuge contractors, in the event dry conditions persist into water year 2014. One of these actions is to use existing authorities to acquire non-project water for agricultural and refuge water supply from various water managers on the San Joaquin River.

MID owns, operates and maintains the New Exchequer and McSwain Dams, reservoirs, and hydroelectric facilities. These are MID's primary water storage facilities on the Merced River. Crocker Huffman Diversion Dam, downstream of McSwain Dam, is the diversion point for the Main Canal, MID's primary delivery facility. These dams are located in the foothills on the western slope of the Sierra Nevada mountain range, approximately 23 miles northeast of Merced. Lake McClure (New Exchequer Reservoir) has a storage capacity of 1,024,600 acre feet (af), while Lake McSwain (McSwain Reservoir) has a storage capacity of 9,730 af and is the regulating reservoir for New Exchequer Dam. Crocker Huffman Diversion Dam has a capacity of approximately 300 af. The New Exchequer Dam Project was completed in 1967 as a multi-purpose facility providing many beneficial uses, including domestic and irrigation water, flood control, hydroelectric power generation, recreation, and the environment (Figure 1). In addition to delivering surface water, MID operates these facilities in a conjunctive manner with the groundwater basin.

Pursuant to Section 3406(b)(3) of the Central Valley Project Improvement Act (CVPIA), Reclamation, in coordination with the U.S. Fish & Wildlife Service, is authorized to acquire water supplies to meet CVPIA habitat restoration and enhancement goals. One of these goals is the doubling of anadromous fish in Central Valley streams and rivers, which includes the Merced River. Reclamation approached MID in an effort to purchase non-project water supplies for water year 2014 (October 1, 2013 to September 30, 2014) that would benefit anadromous fish species on the Merced River, and could then be pumped south of the Delta and stored in San Luis Reservoir to benefit south of Delta contractors and refuges. To this end, Reclamation and MID agreed in principal to a water sale of up to 9,000 af during the period from December 2013

through February 2014. All water sold to Reclamation would derive from MID's pre-1914 water rights to natural flow in the Merced River, and would be over and above any regulatory flows.



## 1.2 Need for the Proposal

The need for the proposal is to increase export to Reclamation's contractors south of the Delta, including agricultural and refuge contractors. The acquired water from the Proposed Action could contribute to increased Merced River flows below Crocker Huffman Diversion Dam. These flows provide spawning, incubation, and juvenile-rearing habitat for fall-run Chinook salmon and Central Valley steelhead that return to the Merced River. Therefore the added ancillary benefit of transferring this water would be to provide further assurances that adequate fish spawning and rearing habitat is available on the Merced River.

## **Proposed Action and Alternatives**

### **2.1 No Action Alternative**

Reclamation would not purchase 9,000 af of non-project water from MID, and MID would divert the water at the MID Main Canal for beneficial use in-District, such as groundwater recharge during the transfer period (H. Eltal, MID, personal communication, November 15, 2013).

### **2.2 Proposed Action**

Reclamation proposes to purchase up to 9,000 af of water from MID during the timeframe from December 2013 through February 2014 and move that water via a conveyance agreement with PID into the DMC. Water transferred to Reclamation would derive from MID's pre-1914 water rights to natural flow in the Merced River. MID would continue to meet in-stream regulatory flows by releasing water from storage and any purchased water would be over and above these regulatory flows.

To make water available for sale, MID would forgo beneficial use of this flow in-district. Mr. Hicham Eltal, MID's Deputy General Manager of Water Rights/Water Supply, has indicated that "The water will be made available from MID's pre- 1914 water diverted from the Merced River at the Main Canal at head, December through February. By changing the point of diversion from the MID Main Canal at head to the screened Patterson pumping facilities on the SJR, the District will be foregoing other beneficial uses of the water in-District, such as reduced recharge during the transfer period" (H. Eltal, Merced Irrigation District, personal communication, November 15, 2013).

Reclamation would purchase the amount of additional flow measured in the Merced River at Shaffer Bridge near Cressy (CDEC station id MBN) above MID's in-stream flow obligations and buffer flows that are currently in the system (180-220 cfs from December through March per Davis-Grunsky contract) up to the conveyance capacity at PID (estimated to be 40 cfs). For example, if there was 20 cfs of inflow to Lake McClure in December, MID would make 210 cfs ( $180 + 10 \text{ [Buffer]} + 20 = 210$ ) available at Shaffer Bridge and Reclamation would pay for the additional 20 cfs. Or alternatively, if dry conditions in December persist where 0 cfs of inflow is going into Lake McClure, no water would be available for transfer to Reclamation.

Under the 90 percent exceedence condition, based on the historical record, the forecasted inflow has a 90 percent chance of being exceeded; the following are forecasted inflows that are likely to be available for purchase:

- December – 5,500 af (~90 cfs)
- January – 9,000 af (~150 cfs)
- February – 18,300 af (~330 cfs)

The amount of water available for purchase would be completely dependent upon the actual hydrology in the Merced River watershed and would be capped at the likely conveyance capacity at PID which is estimated to be 40 cfs. Because 10 percent of the purchased water is assumed to

be lost during conveyance from Shaffer Bridge to PID's pumping facilities, Reclamation could choose to purchase 44 cfs to account for this loss. The above forecast is provided to indicate the likelihood that 9,000 af will be available for purchase over this period. For instance, if the above flows represented the actual flows, Reclamation would purchase water in December, January, and a portion of February until the quantity of bypassed flow totaled 9,000 af. Once 9,000 af is acquired by Reclamation, the water sale would end and MID would resume beneficial use of its water in-district pursuant to its pre-1914 rights. In addition, if conditions turned extremely wet such that no additional fish benefit would be likely from release of MID water, the water sale would end.

Once this water has served its purpose to maintain fish habitat in the Merced River, it is anticipated this water would be diverted via a conveyance agreement with PID. The conveyance agreement allows Reclamation to use PID's pumping station and Main Canal at approximately river mile 97 of the San Joaquin River to convey water to the DMC. The capacity of PID to move water from the main stem San Joaquin River into the DMC varies; the excess capacity at PID is estimated to be approximately 40 cfs per day or 2,380 af per month during the months of December through February. It is Reclamation's intention to deliver 90 percent of the purchased water to the refuge system as Refuge Level 2 diversification water supply that will serve to free up a like amount of water for south of Delta CVP agricultural contractors, with the remaining 10 percent as incremental Refuge Level 4 water supply.

Any of the MID water that cannot be diverted at the Patterson pumping station would remain in the San Joaquin River. At this time no provisions to divert the MID water in the San Joaquin Delta by Reclamation have been made and therefore Reclamation's operations in the San Joaquin Delta would remain the same as under the No Action Alternative.

## **Affected Environment and Environmental Consequences**

### **CEQA Compliance**

As the California Environmental Quality Act (CEQA) lead agency, the MID Board of Directors passed resolution number 2013-28 on September 3, 2013 (Appendix A). Paragraph 3 of resolution number 2013-28 states:

*The Board determines that the water sale approved hereunder is exempt from compliance with the California Environmental Quality Act ('CEQA') as a one (1) year transfer pursuant to applicable provisions of state law including Water Code §§1725 and 1729, the general exemption provided for under the CEQA Guidelines §15061, the categorical exemptions set forth in CEQA Guidelines §§15301 (Class 1) and 15304 (Class 4), and the statutory exemptions set forth in CEQA Guidelines §15282(u), and is not barred by any exception to CEQA exemptions. The Board authorizes the General Manager or General Counsel to sign and file a Notice of Exemption if said officers deem it appropriate or desirable, or if the USBR fails to do so.*

Since Reclamation is not responsible for CEQA compliance, MID will be responsible for filing the notice of exemption.



Department of the Interior Regulations, Executive Orders, and Reclamation guidelines require a discussion of the following items when preparing environmental documentation.

### **Cultural Resources**

This is the type of undertaking that does not have the potential to cause effects to historic properties, should such properties be present, pursuant to the National Historic Preservation Act (NHPA) Section 106 regulations codified at 36 CFR § 800.3(a)(1). Reclamation has no further obligations under NHPA Section 106, pursuant to 36 CFR § 800.3(a)(1). (See Appendix B)

### **Indian Trust Assets**

Indian Trust Assets (ITAs) are legal interests in property or rights held in trust by the United States for Indian Tribes or individual Indians. Indian reservations, Rancherias, and Public Domain Allotments are common ITAs in California. The Proposed Action does not have a potential to affect ITAs. (See Appendix C)

### **Indian Sacred Sites**

Sacred sites are defined in Executive Order 13007 (May 24, 1996) as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." The Proposed Action would not be located on or impact federal lands and therefore would not affect any Indian sacred sites on federal lands.

### **Environmental Justice**

Executive Order 12898 requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of its program, policies, and activities on minority populations and low-income populations. Since there would be no impact to any populations, there would be no adverse human health or environmental effects to minority or low-income populations.

## **3.1 Affected Environment**

### **3.1.1 Water Resources**

The Merced River is the third largest tributary of the San Joaquin River and is approximately 145 miles long. The drainage basin of the Merced River into Lake McClure in the central Sierra Nevada is 1,037 square miles. The average annual runoff is approximately 987,000 af. The Merced River watershed includes the subwatersheds of Illilouette, Echo, Tenaya, Yosemite, Bridalveil, Cascade, and Dry Creeks, as well as the South and North forks of the Merced River. Tributaries to the South Fork include Bishop, Rail, Alder and Chilnualna Creeks. Lakes in the watershed of the Merced River include Merced Lake, Tenaya Lake, the Chain Lakes, May Lake, Lake McClure, and Lake McSwain (Wikipedia, 2013).

MID owns, operates and maintains the New Exchequer and McSwain dams, reservoirs, and hydroelectric facilities. These are MID's primary water storage facilities on the Merced River.

They are located in the foothills on the western slope of the Sierra Nevada mountain range, approximately 23 miles northeast of Merced. Lake McClure is formed by New Exchequer Dam and has a storage capacity of 1,024,600 af, while Lake McSwain, formed by McSwain Dam, has a storage capacity of 9,730 af. As of November 13, 2013, Lake McClure contains 252,725 af or approximately 25 percent capacity (Figure 2: Lake McClure Storage Levels). The New Exchequer Dam Project was completed in 1967 as a multi-purpose facility providing facilities and water for all beneficial uses, including domestic and irrigation water, flood control, hydroelectric power generation, recreation, and the environment. MID operates its surface water facilities in a conjunctive manner with the groundwater basin underlying the district in order to avoid shortages to its customers during dry years. (MID, 2013a). Both in-lieu recharge (beneficial pricing to encourage surface water use) and groundwater recharge are part of the MID's strategy to efficiently utilize its water resources. Merced's agricultural management plan can be accessed at <http://www.mercedid.org/index.cfm/water/ag-water-management-plan/>.

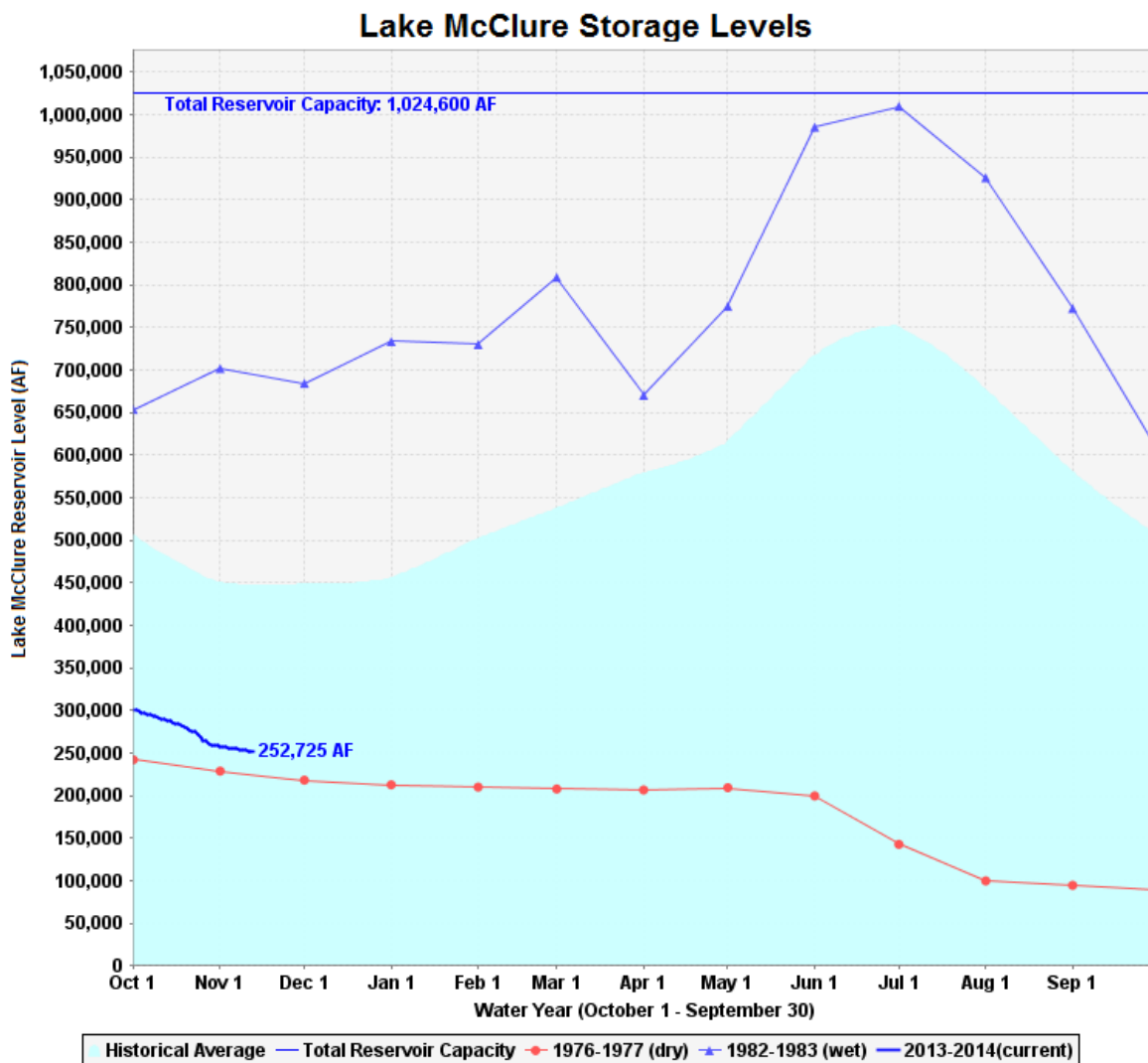
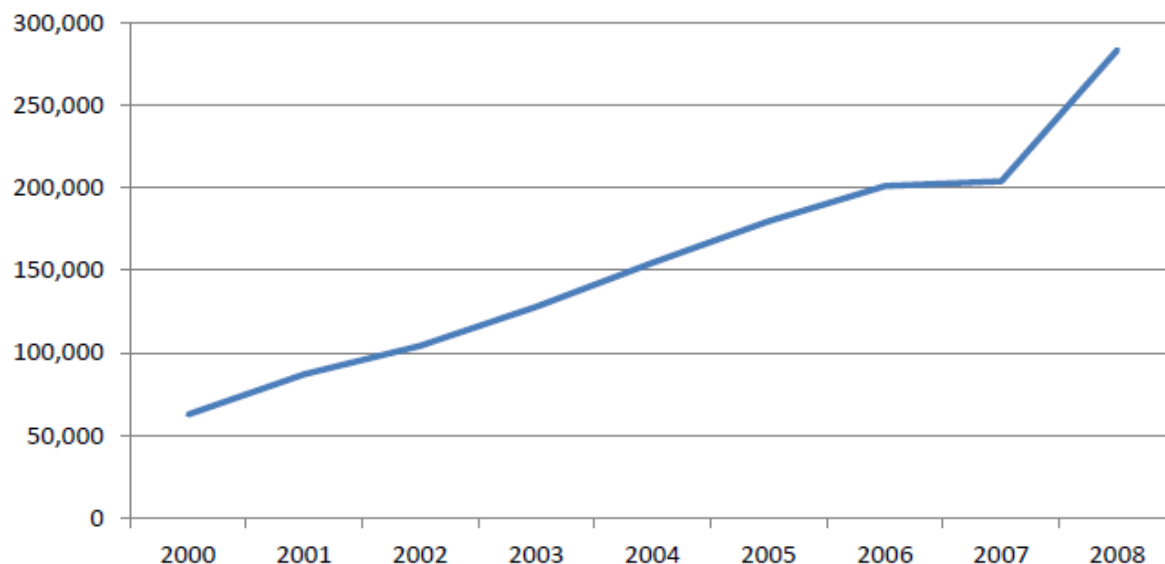


Figure 2: Lake McClure Storage Levels (Department of Water Resources: California Data Exchange Center, 2013)

MID encompasses 164,000 gross acres with irrigable lands within MID amounting to 138,000 acres. At the end of 2007, there were approximately 14,062 residential, commercial, industrial, and government parcels located primarily within the urban area of MID that received drainage service (MID, 2013a).

In addition to surface water from the Merced River, the MID owns, operates and maintains 239 deep irrigation wells of which 170 are currently active. These deep irrigation wells have historically developed a maximum of 182,900 af at 100 percent pumping capacity (1976). The wells have been used by the District conjunctively with surface water since the wells were installed (MID, 2013a).

Merced Area Groundwater Pool Interests (MAGPI) was formed in 1997 through a Memorandum of Understanding. MAGPI is tasked with developing technical data and management strategies to ensure the health of the groundwater basin. Since its formation, MAGPI's main issues have been implementation of the Merced Groundwater Management Plan, which promotes conjunctive surface water and groundwater management. MAGPI consists of 15 municipal and agricultural water purveyors operating in the County of Merced. On July 30, 2008, MAGPI adopted the *Merced Groundwater Basin Groundwater Management Plan 2008 Update*, which identified for implementation a series of actions to preserve and increase the quantity of groundwater resources in the Merced Groundwater Basin (Basin) over the next decade, and protect groundwater resources for future generations (AMEC Geomatrix, Inc., 2008). In addition, through various water management practices and incentive programs, MID has cumulatively recharged close to 283,400 AF using in-lieu recharge programs between 2000 and 2008 as shown in Figure 3.



**Figure 3: MID In-Lieu Recharge Program for 2000-2008**

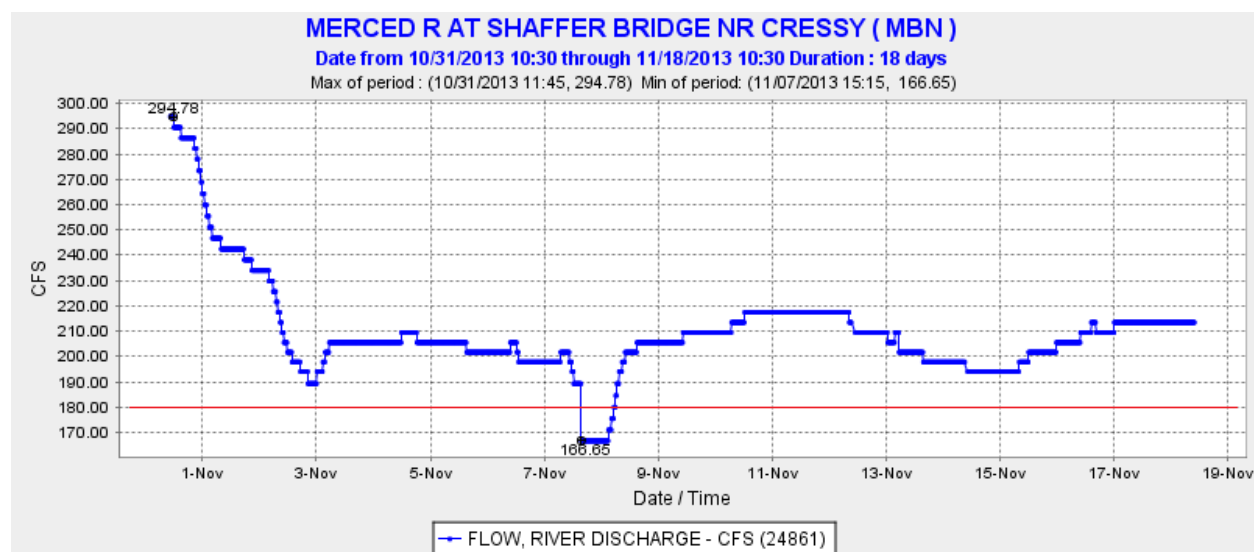
Based on 1995 water levels, DWR estimated the available groundwater in storage beneath the Basin to be approximately 15.7 million af to a depth of 300 feet and 42.2 million ac-ft to the base of fresh water. Between 1995 and 2007, the average decline in groundwater levels in the Basin was approximately 3.7 feet. Based on an average specific yield of 9.0 percent, this is equivalent

to a decrease in storage of approximately 117,200 af. As of 2007, the Basin was in a state of mild groundwater level decline with a cumulative decrease in storage of approximately 720,000 af-ft from 1980 to 2007 (AMEC Geomatrix Inc., 2008).

The average annual applied water within MID from 2000 to 2008 was approximately 263,456 af of surface water and 63,021 af of groundwater. With the addition of annual precipitation of approximately 105,193 af, the total applied water was approximately 431,670 af (MID, 2013b). On November 13, 2013, Lake McClure storage was 252,725 af, or approximately 25 percent of capacity (Department of Water Resources, 2013).

PID, located near Patterson, CA, owns and operates a water system that irrigates 13,225 acres. PID pumps water from the San Joaquin River near river mile 97 uphill into its Main Canal. Water can also be diverted into the district Main Canal by gravity from the Delta Mendota Canal. The capacity of the PID's main pumping plant is 170 cfs and the capacity of the pump facilities that moves water from the Main Canal into the DMC is approximately 40 cfs (Styles et. al., 1999).

From November 1 through November 17, flows in the Merced River at Shaffer Bridge have varied between about 190 and 210 cfs. Flows purchased by Reclamation would be up to 40 cfs greater than these existing flows (see Figure 4).



**Figure 4: Flows at Shaffer Bridge on the Merced River for November 1 to 17, 2013 (Department of Water Resources: California Data Exchange Center, 2013).**

### 3.1.2 Biological Resources

Fluctuations in stream flow have the potential to affect aquatic species that may be present. The affected environment includes species of concern and listed species that may be present in the Merced River, the San Joaquin River, and the Delta. These species, and a summary of their life history, are:

**Table 1: Potentially occurring special-status fish species in the project area.**

Scientific Name	Common Name	Federal Status
<b>FISH SPECIES</b>		
<i>Oncorhynchus tshawytscha</i>	Fall-run Chinook salmon	SC
<i>Oncorhynchus mykiss</i>	Steelhead	T

Key:

(T) Threatened – Listed as likely to become endangered within the foreseeable future

(SC) Species of Concern (established by the National Marine Fisheries Service [NMFS])

**Fall Run Chinook Salmon (*Oncorhynchus tshawytscha*)**

Federal Status: Species of Concern List established by NMFS

Central Valley fall-run Chinook salmon typically emigrate in the spring of their first year and spend two to four years in the ocean before returning to their natal stream to spawn. The annual fall-run Chinook salmon migration in the Merced River begins in early October, peaks in November, and tapers off in December and early January. Spawning occurs shortly after migration, primarily in late November through early January. The salmon eggs incubate and hatch in the gravel between January and April, depending on time of spawning and water temperature. The fry begin to emerge from the gravel during the winter and continue through April. Most juvenile Chinook salmon in the Merced River have left the spawning areas by mid-May outmigrating through the lower San Joaquin River as late as early June.

**Central Valley Steelhead (*Oncorhynchus mykiss*)**

Federal Status: Threatened

Steelhead are the anadromous form of *O. mykiss*. This anadromous fish is a Distinct Population Segment listed under the federal Endangered Species Act by the NMFS (NMFS, 1988 and Federal Register 2006). Adult steelhead typically migrate upstream and spawn during the winter months when river flows are high and water clarity is low (The Nature Conservancy, 2008). Critical habitat for Central Valley steelhead includes riverine habitats in the San Joaquin River Basin (NOAA, 2005).

Steelhead have the greatest diversity of life history patterns of any Pacific salmonid species, including varying degrees of anadromy, differences in reproductive biology, and plasticity of life history between generations. They prefer cold water between 55°F and 70°F that is saturated with dissolved oxygen. Most river resident Central Valley steelhead mature in two to three years, although older resident trout are observed in the Merced River (Zimmerman *et al.*, 2008). Most anadromous forms first spawn after spending two to three years in freshwater and then one to two years in the ocean. Both resident and anadromous forms may be produced in the same redd, and anadromous forms are known to spawn with residents. Central Valley steelhead undergo greater summertime growth during the juvenile physiological transformation (*i.e.*, smoltification) necessary for successful ocean migration compared to the nonanadromous form (Beakes *et al.*, 2010). In addition, winter and spring flows are hypothesized to be important cues related to emigration of juvenile steelhead. As returning adults, spawning occurs in the spring, but the

spawning migration of anadromous forms extends from summer until the following spring. Females excavate a redd in gravel-bottomed riffles and select a mate. The eggs are buried in the redd after spawning. They hatch in three to four weeks and the alevin emerge from the gravel as fry within two to three weeks and begin feeding. Unlike other salmonids which can only spawn once before death, a percentage of steelhead population can return to the ocean and migrate back upstream to spawn in subsequent years.

## **3.2 No Action Alternative**

Under the No Action Alternative, there would be no change to the affected environment.

## **3.3 Proposed Action**

Implementing the proposed water sale could result in changes to the affected environment when compared to the No Action Alternative.

### **3.3.1 Water Resources**

If MID were to sell 9,000 af of water to Reclamation during the December through February timeframe, MID would not divert water to surface or groundwater storage or consumptively use this water, and this would effectively decrease the amount of water that MID would have to meet demand. As of November 13, 2013, Lake McClure storage was at 252,725 af, or approximately 25 percent of capacity, and a reduction in 9,000 af of water would reduce this amount by about 4 percent. If 2014 were another dry water year, then MID would have less surface water to meet demand, and MID would most likely rely on additional groundwater pumping to make up this shortfall. In terms of the 2000 to 2008 average groundwater pumping of 63,021 af, 9,000 af of additional demand on the groundwater basin would represent an increase of approximately 15 percent over the average annual groundwater demand for the period. In contrast, that is still far below the maximum amount of pumping that occurred in 1976 of 182,900 af. Also, it is important to note that MID works with MAGPI to manage and monitor groundwater levels as groundwater continues to be used conjunctively by the District, whereby groundwater is recharged during wet years so that it can be relied upon in dry years.

Water Code §1706 requires that transfers of pre-1914 water result in no injury to third parties. To prevent injury to others, Reclamation's routinely requires transfers in which Reclamation participates to show that no increase in consumptive use will occur. This practice reflects the rules for transfers of CVP water contained in §3405 (a)(1)(I) of the CVPIA; "The water subject to any transfer undertaken pursuant to this subsection shall be limited to water that would have been consumptively used or irretrievably lost to beneficial use during the year or years of the transfer." Additionally Reclamation conforms, where possible, with state law and Reclamation's transfer policy is consistent with the consumptive use requirements of state water law.

To show that consumptive use has not increased, Reclamation's transfer guidelines require documentation of the consumptive use to be forgone with the transfer of water. However, records of consumptive use for this pre-1914 transfer are unavailable. To address this concern, Reclamation requested MID to provide information documenting historical beneficial use for years of similar hydrologic conditions, and MID provided records of diversions to the MID Main

Canal for the time period (Table 2), documenting that MID has made use of its pre-1914 right in prior years. Reclamation is unable to determine the amount consumptively used in prior years.

**Table 2. Diversion of Water in November through February by MID (MID 2013e)**

<i>Month</i>	<i>WY 2008 (af)</i>	<i>WY 2011 (af)</i>	<i>WY 2013(af)<sup>1</sup></i>
November	12	(no available data)	0
December	0	(no available data)	3,271
January	1,981	(no available data)	(no available data)
February	1,171	3,983	

1. Only the first 3 months of WY2013 data was included in MID 2013e.

Water that is diverted at Patterson would be used by CVP contractors to meet agricultural or refuge demand. Because some CVP contractors south of the Delta received only 20 percent of their contractual amounts in 2013, many districts either fallowed fields or switched to groundwater to irrigate crops. Surface water to meet south of Delta demand is either pumped directly from the Delta to farms, or is stored in San Luis Reservoir for subsequent delivery. San Luis Reservoir currently has 464,700 af of water in storage, with a capacity to hold 2,039,000 af; current storage is less than 25 percent of capacity and only 50 percent of the average for this time of year. An increase in 9,000 af could boost current storage by slightly less than one percent. Increasing storage at San Luis Reservoir by this amount would not provide enough additional stored water to satisfy irrigation and refuge demands, but could be used to lower demand on groundwater resources in the area should 2014 turn out to be another dry year.

### **3.3.2 Special-Status Biological Resources**

The two fish species analyzed have the potential to experience superimposition or redd dewatering from the Proposed Action. Redd superimposition occurs if spawning habitat is limited compared to the number of spawning fish. In this situation, one fish may spawn in the same location as an earlier spawner. Superimposition can affect egg survival and overall juvenile production in the Merced River. As seen in the Stanislaus River, superimposition rates are particularly high (82 percent) at the upstream sites where redd densities ranged between 0.221 and 0.453 redds per square-yard (Mesick, 2003). This is also apparent in the Tuolumne River where redd superimposition has been documented to be high due to the limited availability of optimum spawning habitat (Stillwater Sciences, 2013; TID and MID 2013).

The increased releases from Lake McClure may have the potential of leading to redd dewatering. Dewatering occurs if inundation of spawning habitat cannot be maintained for the entire egg incubation period. However, recent flow-habitat modeling shows that a 40 cfs increase in Lake McClure releases does not significantly increase spawning habitat availability due to the incised configuration of the Merced River channel, thus suggesting this level of increased flow in the Merced River would only provide enough additional spawning habitat to reduce redd superimposition (Gard 2005). Additionally, the Proposed Action could potentially decrease river water temperatures to the desired <55°F (<13°C) for salmon and trout spawning, egg incubation, and fry emergence in October - January (U.S. EPA, 2003; Merced ID, 2013d).

#### **Fall-Run Chinook Salmon (*Oncorhynchus tshawytscha*)**

Federal Status: Species of Concern – List established by NMFS

Fall run Chinook salmon will be in the Merced River and possibly the lower San Joaquin River during the Proposed Action during egg, juvenile, and adult stages. Additional flows in the Merced River during migration and incubation should benefit juvenile and adult fall run Chinook salmon. Increased flows in December may marginally increase spawning habitat, minimize redd superimposition, and minimize risks from redd dewatering. If the Proposed Action ends prior to all eggs achieving their fry stage in January, the reduction of flow by less than 40 cfs would pose a de minimus risk of redd dewatering due to the very limited additional spawning habitat inundated by this flow in the Merced River.

### **Central Valley Steelhead (*Oncorhynchus mykiss*)**

Federal Status: Threatened

Outmigrating steelhead juveniles are extremely rare on the Merced River, regardless of the abundant resident trout population in this river (Zimmerman *et al.*, 2008). Juvenile and adult steelhead, and possibly eggs, could be in the Merced River and possibly the lower San Joaquin River during the Proposed Action. Additional flows in the Merced River during migration and incubation should benefit juvenile and adult steelhead. Increased flows in December could increase spawning habitat, minimize redd superimposition, and reduce water temperatures. However, an increase in 40 cfs provides very limited additional habitat, and a reduction of flow by less than 40 cfs at the end of the transfer would pose only a de minimus risk of redd dewatering due to the rarity of steelhead on the Merced River and the very limited additional spawning habitat inundated by this flow in the Merced River. Additionally, the duration of the augmented flow at a stable small increment would likely decrease redd superimposition with de minimus risk of redd dewatering.

### **3.3.3 Cumulative Impacts**

According to CEQ regulations for implementing the procedural provisions of NEPA, a cumulative impact is defined as *the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions*. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

The Proposed Action has the potential to impact surface water availability and groundwater use. As described earlier, MID conjunctively manages its water resources to provide water to its customers. This means that surface water is relied upon in wet years to serve customers and provide for recharge to the groundwater basin. In dry times, the groundwater basin is more heavily relied upon. Based on the most recent data, between 1995 and 2007, the average decline in groundwater levels in the Basin was approximately 3.7 feet, with a cumulative decrease in storage of approximately 720,000 af from 1980 to 2007 (AMEC Geomatrix, Inc.).

In June of 2011, storage in Lake McClure was just over 1,001,000 af, and has gradually declined to approximately 252,725 af (Department of Water Resources, 2013). For this cumulative analysis, Reclamation considers transfers and sales out-of-basin as a cumulative impact to storage, and subsequently added dependence on the groundwater basin. Because surface water



and groundwater are conjunctively managed, transfers of surface water within the basin likely reduces (or shifts) reliance on the groundwater basin. According to Reclamation records and SWRCB petitions for change in place of use, MID approved the sale or transfer of water out of the basin in 2012 and 2013; these were:

- The transfer of up to 15,000 acre-feet of water to San Luis Water District and Westlands Water District in 2013
- The sale of about 25,000 af in 2012 to Reclamation for use in meeting target spring pulse flows at Vernalis
- The transfer of 10,000 af in 2012 and 4,800 af in the spring of 2013 to Westlands Water District
- The transfer of 6,000 af to Merced Irrigation District Sphere of Influence Group for irrigation in the summers of 2012 and 2013
- The transfer of 1,500 af in the summer of 2013 to the East Bear Creek Unit of the San Luis National Wildlife Refuge

Combined with this action, total sales and transfers out of basin in 2012 and 2013 would be approximately 63,000 af. While 9,000 af is a relatively minor amount of this total (approximately 14.3 percent), this cumulative amount is about 25 percent of the water currently in storage in Lake McClure, and could constitute substantial additional demand on the groundwater basin if 2014 remains a dry year.

## Consultation and Coordination

The following is a list of agencies and persons consulted during preparation of this EA.

- The Merced Irrigation District
- The Patterson Irrigation District
- The Fish and Wildlife Service
- The National Marine Fisheries Service
- South of the Delta CVP water contractors
- The California Department of Water Resources

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# Appendix A – MID Board Resolution 2013-29

## MERCED IRRIGATION DISTRICT RESOLUTION NO. 2013-29

### RESOLUTION AUTHORIZING EXECUTION OF AGREEMENT FOR THE ACQUISITION OF WATER BY THE UNITED STATES, BUREAU OF RECLAMATION FROM MERCED IRRIGATION DISTRICT, AND ADOPTING NOTICE OF EXEMPTION RELATING THERETO

**WHEREAS**, the United States Board of Reclamation (USBR) is responsible for making water deliveries to Federal wildlife refuges for the benefit of fish and wildlife; and

**WHEREAS**, the USBR has proposed a one year agreement to purchase pre-1914 water from the Merced Irrigation District (District) to meet its refuges water demand; and

**WHEREAS**, USBR desires to purchase, and the District is willing to sell up to 9,000 AF to the USBR under the terms and conditions substantially set forth in Exhibit 'A'; and

#### **NOW, THEREFORE, BE IT RESOLVED THAT:**

1. The recitals set forth hereinabove are true and correct, and are incorporated herein.
2. The Board authorizes the General Manager to complete negotiations, and execute an agreement with the United States, Bureau of Reclamation for the transfer of up to 9,000 AF of pre-1914 water as further described herein and upon the terms and conditions substantially similar to those set forth in Exhibit 'A'.
3. The Board determines that the water sale approved hereunder is exempt from compliance with the California Environmental Quality Act ('CEQA') as a one (1) year transfer pursuant to applicable provisions of state law including Water Code §§1725 and 1729, the general exemption provided for under the CEQA Guidelines §15061, the categorical exemptions set forth in CEQA Guidelines §§15301 (Class 1) and 15304 (Class 4), and the statutory exemptions set forth in CEQA Guidelines §15282(u), and is not barred by any exception to CEQA exemptions. The Board authorizes the General Manager or General Counsel to sign and file a Notice of Exemption if said officers deem it appropriate or desirable, or if the USBR fails to do so.
4. The Board authorizes the General Manager and any such employees or consultants as the General Manager may designate, to execute such additional agreements and/or documents, and to take such additional actions as may be reasonably necessary or convenient to carry out and implement the Intent of this Resolution.

**PASSED AND ADOPTED** by the Board of Directors of Merced Irrigation District this 3<sup>rd</sup> day of September, 2013, by the following vote:

Ayes:	Directors:	Koehn, Long, Pellissier, Pimentel
Noes:	Directors:	Gonzales
Abstain:	Directors:	None

## Appendix B – NHPA, Section 106 Concurrence



IN REPLY  
REFER TO:  
MP-153  
ENV-3.00

### United States Department of the Interior

BUREAU OF RECLAMATION  
Mid-Pacific Regional Office  
2800 Cottage Way  
Sacramento, California 95825-1898

VIA ELECTRONIC MAIL ONLY

October 18, 2013  
MEMORANDUM

To: Alexandra Aviles  
Natural Resources Specialist – Division of Environmental Affairs

From: William Soule  
Archaeologist – Division of Environmental Affairs

Subject: 14-SCAO-006: 2013/2014 Water Acquisition from Merced Irrigation District (MID)

This proposed undertaking is the purchase by Reclamation of up to 10,000 acre-feet (AF) of water from MID. This is the type of undertaking that does not have the potential to cause effects to historic properties, should such properties be present, pursuant to the National Historic Preservation Act (NHPA) Section 106 regulations codified at 36 CFR Part 800.3(a)(1).

Reclamation proposes to purchase 10,000 AF of water from MID during the period from November 2013 to February 2014 to provide increased fall-run Chinook salmon and Central Valley steelhead spawning and incubation flows in the Merced River while providing additional water to meet CVP water supply needs. There is no ground disturbance, construction of new facilities, alternation of existing facilities, or change in land use associated with this proposed action.

After reviewing the materials provided for the Section 106 determination of effect for this undertaking, I concur with a statement in the EA for this action that neither the Proposed Action nor the No Action Alternative would have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places as determined by Reclamation. This memorandum is intended to convey the completion of the NHPA Section 106 process for this undertaking. Reclamation has no further obligations under NHPA Section 106, pursuant to 36 CFR § 800.3(a)(1). Please retain a copy in the administrative record for this action. Should changes be made to this project, additional NHPA Section 106 review, possibly including consultation with the State Historic Preservation Officer, may be necessary. Thank you for providing the opportunity to comment.

CC: Cultural Resources Branch (MP-153), Anastasia Leigh – Regional Environmental Officer (MP-150)

## Appendix C – ITA Concurrence

10/18/13

DEPARTMENT OF THE INTERIOR Mail - ITA Request - 2013/14 Acquisition of Water from Merced Irrigation District



Aviles, Alexandra <aaviles@usbr.gov>

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### ITA Request - 2013/14 Acquisition of Water from Merced Irrigation District

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RIVERA, PATRICIA <privera@usbr.gov>

Fri, Oct 18, 2013 at 6:09 AM

To: "Aviles, Alexandra" <aaviles@usbr.gov>

Cc: Mary Williams <marywilliams@usbr.gov>, Kristi Seabrook <kseabrook@usbr.gov>

Alex,

I reviewed the proposed action to purchase up to 10,000 af of water from Merced Irrigation District (MID) during the timeframe from November 2013 through February 2014 to provide increased fall-run Chinook salmon and Central Valley steelhead spawning and incubation flows in the Merced River while providing additional water that can meet CVP water supply needs. Water sold to Reclamation would derive from MID's pre-1914 water rights to natural flow in the Merced River. MID would continue to meet in-stream regulatory flows by releasing water from storage, and any purchased water would be over and above these regulatory flows.

To make water available for sale, MID would not divert inflow to storage in Lake McClure pursuant to its pre-1914 water rights or otherwise consumptively use this inflow. MID would instead release flows from storage to meet its in-stream flow obligations (180-220 cfs from November through March per Davis-Grunsky contract), and Reclamation would purchase the amount of additional flow above 180 cfs as measured in the Merced River at Shaffer Bridge near Cressy.

Under the 90 percent exceedence condition, where 90 percent of the historical record of inflows is greater than the current condition, the following are forecasted inflows that are likely to be available for purchase:

- November – 3,400 af (~57 cfs)
- December – 5,500 af (~90 cfs)
- January – 9,000 af (~150 cfs)
- February – 18,300 af (~330 cfs)

The amount of water available for purchase would be completely dependent upon the actual hydrology in the Merced River watershed. The above forecast is provided to indicate the likelihood that 10,000 af will be available for purchase over this period.

Once pumped, this water would become CVP project water, and it is Reclamation's intention to delivery 90 percent of the purchased water to agricultural contractors with the remaining 10 percent delivered to the refuge system as incremental level four water supply.

Once this water has served its purpose to maintain fish habitat in the Merced River, it is anticipated that a portion would be available for diversion at the Jones Pumping Plant operated by Reclamation, or the Harvey O. Banks Pumping Plant operated by the

Department of Water Resources.

The proposed action does not have a potential to impact Indian Trust Assets.

Patricia Rivera  
Native American Affairs Program Manager  
US Bureau of Reclamation  
Mid-Pacific Region  
2800 Sacramento, California 95825  
(916) 978-5194

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